E/ECE/324
E/ECE/TRANS/505 } Rev.1/Add.78/Rev.1/Amend.1

8 March 1996

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM TECHNICAL PRESCRIPTIONS FOR WHEELED VEHICLES, EQUIPMENT AND PARTS WHICH CAN BE FITTED AND/OR BE USED ON WHEELED VEHICLES AND THE CONDITIONS FOR RECIPROCAL RECOGNITION OF APPROVALS GRANTED ON THE BASIS OF THESE PRESCRIPTIONS */

(Revision 2, including the amendments entered into force on 16 October 1995)

Addendum 78: Regulation No. 79

Revision 1 - Amendment 1

Incorporating:

Supplement 2 to the original version of the Regulation - Date of entry into force: 5 December 1994
Corrections to the original version as referred to in the Depositary Notification C.N.354.1995.TREATIES-73 of 13 November 1995
01 series of amendments - Date of entry into force: 14 August 1995

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO STEERING EQUIPMENT

UNITED NATIONS

---

*/ Former title of the Agreement:

Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

Paragraph 1 amend to read:

"1. SCOPE

1.1. This Regulation applies to the steering equipment of vehicles of categories M */, N */ and O */;

1.2. It does not cover steering equipment with a purely pneumatic, purely electric or purely hydraulic transmission, except:

1.2.1. auxiliary steering equipment (ASE) with a purely electric or purely hydraulic transmission for vehicles of ctegories M and N;

1.2.2. steering equipment with a purely hydraulic transmission for vehicles of category O."

Paragraph 2.5.3.4., amend to read:

"2.5.3.4. Auxiliary steering equipment (ASE) in which the wheels of the rear axle(s) of vehicles of categories M and N are steered in addition ...."

Insert a new paragraph 2.6. to read:

"2.6. Types of steering transmission

Depending on the way the steering forces are transmitted, the following types of steering transmission are distinguished:

2.6.1. Purely mechanical steering transmission means a steering transmission in which the steering forces are transmitted entirely by mechanical means;

2.6.2. Purely hydraulic steering transmission means a steering transmission in which the steering forces, somewhere in the transmission, are transmitted only by hydraulic means;

2.6.3. Purely electric steering transmission means a steering transmission in which the steering forces, somewhere in the transmission, are transmitted only through electric means;

2.6.4. Hybrid steering transmission means a steering transmission in which part of the steering forces are transmitted through one and the other part through another of the above-mentioned means;

2.6.4.1. Hybrid mechanical steering transmission means a steering transmission where a part of the steering forces are transmitted by purely mechanical means and the other parts either:

---

*/ As given in Consolidated Resolution (R.E.3), TRANS/SC1/WP29/78/Amend.3.

2.6.4.1.1. hydraulic - mechanical-hydraulic; or

2.6.4.1.2. electric - mechanical-electric; or

2.6.4.1.3. pneumatic - mechanical-pneumatic;

in either case, where the mechanical part of the transmission is designed only to give position feedback and is too weak to transmit the total sum of the steering forces, this system shall be considered to be purely hydraulic, respectively purely electric, or purely pneumatic steering transmission;

2.6.4.2. Other hybrid steering transmission means any other combination of the above-mentioned steering transmission."

Paragraph 4.2, amend to read:

"... its first two digits (at present 01) shall indicate the series of amendments ..."

Note 1/, pertinent to paragraph 4.4.1., amend to read:

1/ "1 for Germany, ... 8 for the Czech Republic, ... 15 (vacant), ... 22 for the Russian Federation, 23 for Greece, 24 (vacant), 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30-36 (vacant) and 37 for Turkey. Subsequent numbers ..."

Paragraph 5.1.1., add the following text at the end:

"... Trailers equipped with purely hydraulic steering transmissions shall comply also with annex 5."

Paragraph 5.1.4., amend to read:

"For the purpose of this Regulation the steered wheels, the steering control and all mechanical parts of the steering transmission shall not be regarded as liable to breakage if they are amply dimensioned, are readily accessible for maintenance, and exhibit safety features at least equal to those prescribed for other essential components (such as the braking system) of the vehicle. Where the failure of any such part would be likely to result in loss of control of the vehicle, that part must be made of metal or of a material with equivalent characteristics and must not be subject to significant distortion in normal operation of the steering system."

Paragraph 6.2.6.2., the table, for vehicle category M_3 and N_3, insert in the column "INTACT - Turning radius (m)" a reference to footnote **/ (twice), and insert below the table a new footnote **/ reading (for vehicle category N_3 this replaces the text given directly in the table):

"**/ or full lock if 12 m radius is not attainable;"

Annex 2, in the examples of the approval mark and in the captions below amend the approval No. "002439" to read "012439" (3 times) and the words "Regulation No. 79 in its original form" and "Regulation No. 79 included no amendments" to read "Regulation No. 79 incorporating the 01 series of amendments".

Annex 4, paragraph 2.2.1.1., amend to read:

"2.2.1.1. Circular test

The vehicle shall be driven into a test circle with a radius "R" (m) and a speed "V" (km/h) corresponding to its category and the values given in the table below:

Vehicle category	R	V 1/ 2/
M_1, N_1	100	80
M_2, N_2	50	50
M_3, N_3	50	45

The failure shall be introduced when the specified speed has been reached. The test shall include driving in a clockwise direction and in a counter-clockwise direction.

1/ If the ASE is in a mechanically locked position at this specified speed, the test speed will be modified to correspond to the maximum speed where the system is functioning. Maximum speed means the speed when the ASE becomes locked, minus 5 km/h.

2/ If the dimensional characteristics of the vehicle imply an overturning risk, the manufacturer shall provide to the Technical Service behaviour simulation data demonstrating a lower maximum safe speed for conducting the test. Then the Technical Service will choose this test speed."

Insert a new annex 5 to read:

"Annex 5

PROVISIONS FOR TRAILERS HAVING PURELY HYDRAULIC STEERING TRANSMISSIONS

1. General provisions

Vehicles are not required to be fitted with purely hydraulic steering transmissions. However, if any vehicles are so fitted, they shall comply with the provisions of this annex.

2. Specific provisions

2.1. Performance of hydraulic lines and hose assemblies.

2.1.1. the hydraulic lines of purely hydraulic transmission must be capable of withstanding a pressure of at least four times the maximum normal service pressure (T) specified by the manufacturer. Hose assemblies shall comply with ISO Standards 1402:1984, 6605:1986 and 7751:1983.

2.2. In systems dependent on an energy supply;

2.2.1. the energy supply must be protected from excess pressure by a pressure limiting valve which operates at the pressure T.

2.3. Protection of steering transmission;

2.3.1. the steering transmission must be protected from excess pressure by a pressure limiting valve which operates at between 1.5T and 2.2T.

2.4. Tractor/trailer alignment:

2.4.1. with the tractor of a tractor/trailer combination travelling in a straight line, the trailer must remain in alignment with the tractor;

2.4.2. in order to maintain steering alignment in accordance with paragraph 2.4.1. above, trailers shall be provided with a means of re-adjustment, which may be either automatic or manual;

2.5. Steerability with a failure in the steering transmission;

2.5.1. the steerability of vehicles with purely hydraulic steering transmissions shall be maintained with a failure in any part of the transmission. Vehicles shall be tested in this (failed) condition and satisfy the requirements of paragraph 6.3. of this Regulation. In particular the 5 km/h and 25 km/h tests specified at paragraph 6.3.2. shall be conducted with the steering transmission in the intact and failed conditions respectively.

2.6. Electromagnetic interference;

2.6.1. the operation of steering equipment must not be adversely affected by electromagnetic fields. Until uniform test procedures have been agreed, the vehicle manufacturer shall provide the technical services with their test procedures and results."